(FILE 'HOME' ENTERED AT 07:36:39 ON 24 APR 2001)

FILE 'MEDLINE' ENTERED AT 07:36:46 ON 24 APR 2001

L1 2587 S NADH (1W) DEHYDROGENASE
L2 0 S NDS AND NADH
L3 0 S BANDMAN O
L4 0 S BANDMAN O/AU
L5 33 S L1 (P) ANTIBODY

FILE 'STNGUIDE' ENTERED AT 07:50:29 ON 24 APR 2001

FILE 'MEDLINE' ENTERED AT 07:50:55 ON 24 APR 2001

L6 4959 S UBIQUINONE
L7 111 S L6 AND ANTIBODY
L8 45 S L7 AND NADH
L9 7 S L7 AND NUCLEAR
L10 7012 S L1 OR L6
L11 4 S B15 AND BOVINE

L5 ANSWER 33 OF 33 MEDLINE
ACCESSION NUMBER: 77006146 MEDLINE
DOCUMENT NUMBER: 77006146 PubMed ID: 9408
TITLE: The **NADH dehydrogenase** of the respiratory chain of Escherichia coli. II. Kinetics of the purified enzyme and the effects of **antibodies** elicited against it on membrane-bound and free enzyme.
AUTHOR: Dancey G F; Shapiro B M
SOURCE: JOURNAL OF BIOLOGICAL CHEMISTRY, (1976 Oct 10) 251 (19) 5921-8.
Journal code: HIV; 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197612
ED Entered STN: 19900313
Last Updated on STN: 19970203
Entered Medline: 19761203

AB The purified respiratory chain **NADH dehydrogenase** of Escherichia coli oxidizes NADH with either dichlorophenolindophenol (DCIP). ferricyanide, or menadione as electron acceptors, with values for NADH are similar with the three electron acceptors (approximately 50 muM).

The purified enzyme contains no flavin and has an absolute requirement for FAD, with Km values around 4 muM. The pH optimum of the enzyme appears to be between 6.5 and 7; the optimum is difficult to establish because of nonenzymatic reduction of DCIP at the lower pH values. Potassium cyanide stimulates the DCIP reductase activity about 2-fold, but has no effect on ferricyanide reductase. The enzyme exhibits hyperbolic kinetics with respect to NADH concentration in both the ferricyanide and DCIP reductase assays, but cooperatively is seen in the menadione reductase reaction. NAD+ is an effective competitive inhibitor of the reaction (Ki congruent to 20 muM); in the presence of NAD+, the NADH saturation curve becomes cooperative, even in the DCIP reductase assay. Many adenine containing nucleotides are competitive inhibitors of the enzyme. The apparent Ki values for these nucleotides as inhibitors of the purified enzyme, the membrane-bound **NADH dehydrogenase**, and the NADH oxidase are equivalent. An examination of inhibitory effects of a series of adenine nucleotides suggests that the inhibitors act as analogues of NAD+, which is the true physiological inhibitor. The results suggest that the enzyme in situ is always partially inhibited by the levels of NAD- in the E coli cell, and thus behaves in a cooperative fashion to changes in the NAD+/NADH ratio. An **antibody** has been elicited against the purified **NADH dehydrogenase**. Immunodiffusion and crossed immunoelectrophoresis show that the **antibody** is directed principally against the **NADH dehydrogenase**, with some activity against minor contaminants in the purified preparation. The **antibody** inhibits **NADH dehydrogenase** activity 50% at saturating levels. When this **antibody** preparation is used to examine solubilized membrane preparations, two major immunoprecipitates are found. A parallel inhibition of the membrane-bound **NADH dehydrogenase** and NADH oxidase activities is seen, supporting the hypothesis that the purified enzyme is indeed a component of the respiratory chain-dependent NADH oxidase pathway.

L5 ANSWER 28 OF 33 MEDLINE
ACCESSION NUMBER: 86164936 MEDLINE
DOCUMENT NUMBER: 86164936 PubMed ID: 3956724
TITLE: Structural relationships between the NADH dehydrogenases of
Paracoccus denitrificans and bovine heart mitochondria as revealed by immunological cross-reactivities.
AUTHOR: George C L; Ferguson S J; Cleeter M W; Ragan C I
SOURCE: FEBS LETTERS, (1986 Mar 17) 198 (1) 135-9.
Journal code: EUH; 0155157. ISSN: 0014-5793.
PUB. COUNTRY: Netherlands
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198605
ED Entered STN: 19900321
Last Updated on STN: 19900321
Entered Medline: 19860507

AB An **antibody** raised against two subunits (Mr 48 000 and 25 000) of **NADH dehydrogenase** from Paracoccus denitrificans cross-reacts with one of more than 20 polypeptides that form the bovine heart mitochondrial **NADH dehydrogenase**. The cross-reacting subunit has Mr 51 000 and is believed to be the NADH-binding subunit of the enzyme. **Antibodies** raised against certain subunits of the bovine heart **NADH dehydrogenase** were tested for cross-reactivity with P. denitrificans cytoplasmic membranes. Of those tested, only one, an **antibody** specific for the 49 kDa subunit of mitochondrial **NADH dehydrogenase**, cross-reacted with the bacterial membranes. It recognised a polypeptide of approximate Mr 46 000. This is an indication for a previously undetected third subunit of **NADH dehydrogenase** from P. denitrificans. The immunological cross-reactions indicate that the **NADH dehydrogenases** from P. denitrificans and bovine heart mitochondria are related structurally.

L5 ANSWER 22 OF 33 MEDLINE
ACCESSION NUMBER: 89104367 MEDLINE
DOCUMENT NUMBER: 89104367 PubMed ID: 2463782
TITLE: Studies on the structure of NADH:ubiquinone oxidoreductase complex: topography of the subunits of the iron-sulfur flavoprotein component.
AUTHOR: Han A L; Yagi T; Hatefi Y
CORPORATE SOURCE: Department of Basic and Clinical Research, Research Institute of Scripps Clinic, La Jolla, California 92037.
CONTRACT NUMBER: DK08126 (NIDDK)
SOURCE: ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS, (1988 Dec) 267 (2)
490-6.
Journal code: 6SK; 0372430. ISSN: 0003-9861.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198902
ED Entered STN: 19900308
Last Updated on STN: 19970203
Entered Medline: 19890216

AB A catalytic component of the bovine mitochondrial NADH:ubiquinone oxidoreductase complex (Complex I) is a soluble **NADH dehydrogenase** iron-sulfur flavoprotein (FP). FP is composed of three subunits of Mr 51,000, 24,000, and 9,000, and contains FMN and two iron-sulfur clusters. Previous studies by others with the use of various chemical probes had suggested that, except for an access for NADH to the 51-kDa subunit, the FP polypeptides are buried within Complex I and shielded from the medium. In the present study, monospecific **antibodies** were raised to each of the three FP subunits, and used in conjunction with Complex I, submitochondrial particles (SMP), mitoplasts, and intact mitochondria as sources of antigens. Results of enzyme-linked immunosorbent assays and 125I-protein A labeling experiments indicated that epitopes from the 51-, 24-, and 9-kDa subunits of FP are exposed to the medium in Complex I and SMP, but not in mitoplasts and mitochondria. Appropriate enzymatic assays showed that none of the **antibodies** inhibited the **NADH dehydrogenase** activity of isolated FP or the NADH oxidase activity of SMP. These results have been discussed in relation to the structure of Neurospora Complex I deduced from membrane crystals of the isolated enzyme complex by Leonard et al. [K. Leonard, H. Haiker, and H. Weiss (1987) J. Mol. Biol. 194, 277-286].

L5 ANSWER 21 OF 33 MEDLINE
ACCESSION NUMBER: 89193767 MEDLINE
DOCUMENT NUMBER: 89193767 PubMed ID: 3240313
TITLE: **Antibodies** against alcohol dehydrogenase and lactate dehydrogenase inhibit the activities of other unrelated **NADH**-requiring **dehydrogenases**
.
AUTHOR: Srivastava A; Katiyar S S
CORPORATE SOURCE: Department of Chemistry, Indian Institute of Technology, Kanpur.
SOURCE: BIOCHEMISTRY INTERNATIONAL, (1988 Oct) 17 (4) 611-5.
Journal code: 9Y9; 8100311. ISSN: 0158-5231.
PUB. COUNTRY: Australia
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198904
ED Entered STN: 19900306
Last Updated on STN: 19900306
Entered Medline: 19890425

AB Polyclonal rabbit antibodies to NADH-requiring enzymes such as yeast alcohol-dehydrogenase (ADH) and lactate-dehydrogenase (LDH) immunoinhibit the activities of other unrelated dehydrogenases. The immunoinhibition of malate-dehydrogenase (MDH) activity by anti-yeast ADH IgG and anti-hog LDH
IgG was dependent on the concentration of antibodies and time. This demonstration of cross-reactivity with unrelated enzyme proteins reveals the existence of an antigenic site around the NADH binding region in each of these enzymes. Pre-treatment of the enzyme with NADH resulted in complete protection against immuno-inactivation. The competitive binding of NADH and the ineffectiveness of ATP establish the difference in the antigenic site around the NADH- and ATP-binding region.

L5 ANSWER 9 OF 33 MEDLINE
ACCESSION NUMBER: 95186529 MEDLINE
DOCUMENT NUMBER: 95186529 PubMed ID: 7533543
TITLE: Multiple deficiencies of mitochondrial DNA- and nuclear-encoded subunits of respiratory **NADH dehydrogenase** detected with peptide- and subunit-specific **antibodies** in mitochondrial myopathies.
AUTHOR: Bentlage H A; Janssen A J; Chomyn A; Attardi G; Walker J E;
Schagger H; Sengers R C; Trijbels F J
CORPORATE SOURCE: Department of Pediatrics, Academic Hospital Nijmegen St. Radboud, The Netherlands.
CONTRACT NUMBER: GM-11726 (NIGMS)
SOURCE: BIOCHIMICA ET BIOPHYSICA ACTA, (1995 Mar 8) 1234 (1) 63-73.
Journal code: A0W; 0217513. ISSN: 0006-3002.
PUB. COUNTRY: Netherlands
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199504
ED Entered STN: 19950425
Last Updated on STN: 19970203
Entered Medline: 19950413

AB **Antibodies** have been raised against synthetic peptides corresponding to several computer-predicted epitopes of three mtDNA-encoded subunits, ND4, ND5 and ND6, of the human respiratory chain **NADH dehydrogenase** (Complex I). **Antibodies** were characterized by a sensitive immunoblotting assay using proteins from human skeletal muscle mitochondria and by immunoprecipitation of radio-labeled HeLa cell mitochondrial translation products. Only **antibodies** against two of six selected peptides of the ND4 subunit, i.e., the C-terminal peptide and an internal peptide close to the C-terminus, reacted in both assays with the subunit. **Antibodies** raised against an internal peptide close to the N-terminus of the ND5 subunit and **antibodies** raised against an internal epitope of the ND6 subunit also reacted in both the immunoblotting and immunoprecipitation assays. The **antibodies** described above and other Complex I subunit- or holoenzyme-specific **antibodies** were used to investigate the subunit deficiencies of the respiratory **NADH dehydrogenase** in the skeletal muscle of patients affected by mitochondrial myopathies associated with Complex I defects. The reduction in enzyme activity correlated in an immunoblot assay with a decrease of four mtDNA-encoded subunits of the enzyme, as well as with a decrease of other subunits of Complex I encoded in the nDNA. The present work provides the first evidence of a decrease in **NADH dehydrogenase** subunits encoded in the mitochondrial genome in myopathy patients.

L11 ANSWER 2 OF 4 MEDLINE
ACCESSION NUMBER: 92389317 MEDLINE
DOCUMENT NUMBER: 92389317 PubMed ID: 1518044
TITLE: Sequences of 20 subunits of NADH:ubiquinone oxidoreductase from **bovine** heart mitochondria. Application of a novel strategy for sequencing proteins using the polymerase chain reaction.
AUTHOR: Walker J E; Arizmendi J M; Dupuis A; Fearnley I M; Finel M; Medd S M; Pilkington S J; Runswick M J; Skehel J M
CORPORATE SOURCE: Medical Research Council Laboratory of Molecular Biology, Cambridge, U.K.
SOURCE: JOURNAL OF MOLECULAR BIOLOGY, (1992 Aug 20) 226 (4) 1051-72.
Journal code: J6V; 2985088R. ISSN: 0022-2836.
PUB. COUNTRY: ENGLAND: United Kingdom
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-X63208; GENBANK-X63209; GENBANK-X63210; GENBANK-X63211; GENBANK-X63212; GENBANK-X63213; GENBANK-X63214; GENBANK-X63215; GENBANK-X63216; GENBANK-X63217; GENBANK-X63218; GENBANK-X63219; GENBANK-X63220; GENBANK-X63221; GENBANK-X63222; GENBANK-X63223; GENBANK-X63224; GENBANK-X64836; GENBANK-X64897; GENBANK-X64898
ENTRY MONTH: 199210
ED Entered STN: 19921023
Last Updated on STN: 19921023
Entered Medline: 19921006

AB NADH:ubiquinone oxidoreductase, the first enzyme in the respiratory electron transport chain of mitochondria, is a membrane-bound multi-subunit assembly, and the **bovine** heart enzyme is now known to contain about 40 different polypeptides. Seven of them are encoded in the mitochondrial DNA; the remainder are the products of nuclear genes and are imported into the organelle. The primary structures of 12 of the nuclear coded subunits have been described and those of a further 20 are described here. The subunits have been sequenced by following a strategy based on the polymerase chain reaction. This strategy has been tailored from existing methods with the twofold aim of avoiding the use of cDNA libraries, and of obtaining a cDNA sequence rapidly with minimal knowledge of protein sequence, such as can be determined in a single N-terminal sequence experiment on a polypeptide spot on a two-dimensional gel. The utility and speed of this strategy have been demonstrated by sequencing cDNAs encoding 32 nuclear-coded-membrane associated proteins found in **bovine** heart mitochondria, and the procedures employed are illustrated with reference to the cDNA sequence of the 20 subunits of NADH:ubiquinone oxidoreductase that are presented. Extensive use has also been made of electrospray mass spectrometry to measure molecular masses of the purified subunits. This has corroborated the protein sequences of subunits with unmodified N terminals, and their measured molecular masses agree closely with those calculated from the protein sequences. Nine of the subunits, B8, B9, B12, B13, B14, **B15**, B17, B18 and B22 have modified alpha-amino groups. The measured molecular masses of subunits B8,

B13, B14 and B17 are consistent with the post-translational removal of the initiator methionine and N-acetylation of the adjacent amino acid. The initiator methionine of subunit B18 has been removed and the N-terminal glycine modified by myristoylation. Subunits B9 and B12 appear to have N-terminal and other modifications of a hitherto unknown nature. The sequences of the subunits of **bovine** complex I provide important clues about the location of iron-sulphur clusters and substrate and cofactor binding sites, and give valuable information about the topology of the complex. No function has been ascribed to many of the subunits, but some of the sequences indicate the presence of hitherto unsuspected biochemical functions. Most notably the identification of an acyl carrier protein in both the **bovine** and Neurospora crassa complexes provides evidence that part of the complex may play a role in fatty acid biosynthesis in the organelle, possibly in the formation of cardiolipin.(ABSTRACT TRUNCATED AT 400 WORDS)

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#57	Search **mitochondria and autoantibody**	13:38:00	794
#53	Search **complex I and autoantibody**	13:34:59	7
#49	Search **complex I and sera**	13:33:18	13
#46	Search **complex I and immunoprecipitation**	13:32:42	30
#44	Search **complex I and immuno**	13:30:49	5
#41	Search **complex I and immunohistochemical**	13:28:32	14
#32	Link to **PubMed** from (**7533543**)	13:25:39	125
#31	Link to **PubMed** from (**3022724**)	13:15:02	0
#27	Link to **PubMed** from (**1665052**)	13:12:02	0
#24	Link to **PubMed** from (**1392618**)	13:09:14	0
#9	Link to **PubMed** from (**11112787**)	13:07:06	94
#1	Search **antibody and complex I**	12:52:29	106

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☑ 1: Triepels RH, Hanson BJ, van Den Heuvel LP, Sundell L, Marusich MF, Smeitink JA, Capaldi RA. Relate

Human Complex I Defects Can Be Resolved by Monoclonal Antibody Analysis into Di Subunit Assembly Patterns.
J Biol Chem. 2001 Mar 23;276(12):8892-7.
PMID: 11112787 [PubMed - in process]

☐ 2: Hattori N, Tanaka M, Ozawa T, Mizuno Y. Relate

Immunohistochemical studies on complexes I, II, III, and IV of mitochondria in Parkin disease.
Ann Neurol. 1991 Oct;30(4):563-71.
PMID: 1665052 [PubMed - indexed for MEDLINE]

☐ 3: Morgan-Hughes JA, Schapira AH, Cooper JM, Holt IJ, Harding AE, Clark JB. Relate

The molecular pathology of respiratory-chain dysfunction in human mitochondrial myo
Biochim Biophys Acta. 1990 Jul 25;1018(2-3):217-22.
PMID: 2168209 [PubMed - indexed for MEDLINE]

☐ 4: Schapira AH, Cooper JM, Morgan-Hughes JA, Patel SD, Cleeter MJ, Ragan CI, Clark JB. Relate

Molecular basis of mitochondrial myopathies: polypeptide analysis in complex-I deficie
Lancet. 1988 Mar 5;1(8584):500-3.
PMID: 2893919 [PubMed - indexed for MEDLINE]

☐ 5: Tanaka M, Nishikimi M, Suzuki H, Ozawa T, Nishizawa M, Tanaka K, Miyatake T. Relate

Deficiency of subunits in heart mitochondrial NADH-ubiquinone oxidoreductase of a p with mitochondrial encephalomyopathy and cardiomyopathy.
Biochem Biophys Res Commun. 1986 Oct 15;140(1):88-93.
PMID: 3022724 [PubMed - indexed for MEDLINE]

☐ 6: Smith S, Ragan CI. Relate

The organization of NADH dehydrogenase polypeptides in the inner mitochondrial me
Biochem J. 1980 Feb 1;185(2):315-26.
PMID: 7396818 [PubMed - indexed for MEDLINE]

☐ 7: Kumar V, Malviya AN, Beutner EH, Elliott WB. Relate

Mitochondrial antibodies--heterogeneity and effects on mitochondrial respiration.

J Clin I[redacted]mmunol. 1979 Nov;2(4):325-8.
PMID: 231657 [PubMed - indexed for MEDLINE]

8: Smeitink JA, Loeffen JL, Triepels RH, Smeets RJ, Trijbels JM, van den Heuvel LP. Relate

Nuclear genes of human complex I of the mitochondrial electron transport chain: state art.

Hum Mol Genet. 1998;7(10):1573-9. Review.
PMID: 9735378 [PubMed - indexed for MEDLINE]

9: Bentlage HA, Janssen AJ, Chomyn A, Attardi G, Walker JE, Schagger H, Sengers RC, Trijbels FJ. Relate

Multiple deficiencies of mitochondrial DNA- and nuclear-encoded subunits of respirat NADH dehydrogenase detected with peptide- and subunit-specific antibodies in mitoch myopathies.

Biochim Biophys Acta. 1995 Mar 8;1234(1):63-73.
PMID: 7533543 [PubMed - indexed for MEDLINE]

10: Haines AM, Cooper JM, Morgan-Hughes JA, Clark JB, Schapira AH. Relate

One-step immunoaffinity purification of complex I subunits from beef heart mitochondr

Protein Expr Purif. 1992 Jun;3(3):223-7.
PMID: 1392618 [PubMed - indexed for MEDLINE]

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An analysis of the polypeptide composition of bovine heart mitochondrial NADH-ubiquinone oxidoreductase by two-dimensional polyacrylamide-gel electrophoresis.

Heron C, Smith S, Ragan CI.

Purified preparations of Complex I (NADH-ubiquinone oxidoreductase) from bovine heart mitochondria may be resolved into 26 polypeptides by two-dimensional analysis combining isoelectric focusing and polyacrylamide-gel electrophoresis in sodium dodecyl sulphate. Similar analyses of the fragments obtained from chaotropic resolution of the enzyme show that each of these fragments contains a distinct and non-overlapping set of polypeptides. Evidence that the polypeptides seen in the intact enzyme are true constituents comes from analyses of immunoprecipitates obtained by allowing Complex I or solubilized submitochondrial particles to react with antisera directed against the whole enzyme and a subfragment of the enzyme.

PMID: 496892 [PubMed - indexed for MEDLINE]

☐ 1: JE0383 **NADH dehydrogenase (ubiquinone) (EC 1.6.5.3) chain NDUFB4 - human** BLink, PubMed, Related Sequences, Taxonomy, OMIM, LinkOut

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LOCUS       JE0383         129 aa                      PRI       21-JUL-2000
DEFINITION  NADH dehydrogenase (ubiquinone) (EC 1.6.5.3) chain NDUFB4 - human.
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            summary: #length 129 #molecular-weight 15208 #checksum 2799;
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            21-Jul-2000.
KEYWORDS    NAD; oxidoreductase.
SOURCE      human.
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1  (residues 1 to 129)
  AUTHORS   Loeffen,J.L., Triepels,R.H., van den Heuvel,L.P., Schuelke,M.,
            Buskens,C.A., Smeets,R.J., Trijbels,J.M. and Smeitink,J.A.
  TITLE     cDNA of eight nuclear encoded subunits of NADH:ubiquinone
            oxidoreductase: human complex I cDNA characterization completed
  JOURNAL   Biochem. Biophys. Res. Commun. 253 (2), 415-422 (1998)
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1: BC000855 **Homo sapiens, NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 4 (15kD, B15), clone MGC:5105, mRNA, complete cds**


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REFERENCE   1  (bases 1 to 513)
  AUTHORS   Strausberg,R.
  TITLE     Direct Submission
  JOURNAL   Submitted (15-NOV-2000) National Institutes of Health, Mammalian
            Gene Collection (MGC), Cancer Genomics Office, National Cancer
            Institute, 31 Center Drive, Room 11A03, Bethesda, MD 20892-2590,
            USA
  REMARK    NIH-MGC Project URL: http://mgc.nci.nih.gov
COMMENT     Contact: MGC help desk
            Email: cgapbs-r@mail.nih.gov
            Tissue Procurement: ATCC
            cDNA Library Preparation: Life Technologies, Inc.
            cDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL)
            DNA Sequencing by: Sequencing Group at the Stanford Human Genome
            Center, Stanford University School of Medicine, Stanford, CA  94305
            Web site:       http://www-shgc.stanford.edu
            Contact:  (Dickson, Mark) mcd@paxil.stanford.edu
            Dickson, M., Schmutz, J., Grimwood, J., Rodriquez, A., and Myers,
            R. M.

            Clone distribution: MGC clone distribution information can be found
            through the I.M.A.G.E. Consortium/LLNL at: http://image.llnl.gov
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1: Loeffen JL, Triepels RH, van den Heuvel LP, Schuelke M, Buskens CA, Smeets RJ, Trijbels JM, Smeitink JA. Related Articles, Protein, Nucle

cDNA of eight nuclear encoded subunits of NADH:ubiquinone oxidoreductase: human c cDNA characterization completed.
Biochem Biophys Res Commun. 1998 Dec 18;253(2):415-22.
PMID: 9878551 [PubMed - indexed for MEDLINE]

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In vivo dissection of the mitochondrial respiratory NADH: ubiquinone oxidoreductase (c
Biochim Biophys Acta. 1994 Aug 30;1187(2):121-4. Review. No abstract available.
PMID: 8075104 [PubMed - indexed for MEDLINE]

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Complementary DNA sequences of two 14.5 kDa subunits of NADH:ubiquinone oxidore from bovine heart mitochondria. Completion of the primary structure of the complex?
FEBS Lett. 1992 Nov 16;313(1):80-4.
PMID: 1426273 [PubMed - indexed for MEDLINE]

4: Smeitink JA, Loeffen JL, Triepels RH, Smeets RJ, Trijbels JM, van den Heuvel LP. Re

Nuclear genes of human complex I of the mitochondrial electron transport chain: state o
Hum Mol Genet. 1998;7(10):1573-9. Review.
PMID: 9735378 [PubMed - indexed for MEDLINE]

5: Pilkington SJ, Arizmendi JM, Fearnley IM, Runswick MJ, Skehel JM, Walker JE. Re

Structural organization of complex I from bovine mitochondria.
Biochem Soc Trans. 1993 Feb;21(1):26-31. Review. No abstract available.
PMID: 8449305 [PubMed - indexed for MEDLINE]

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